

	A	B	C	D	E	F	G	H	I	J	K	L
1	User Selected Options			Background Statistics for Data Sets with Non-Detects								
2												
3	Date/Time of Computation			7/30/2013 10:36:37 AM								
4	From File			WorkSheet.xls								
5	Full Precision			OFF								
6	Confidence Coefficient			95%								
7	Coverage			95%								
8	rent or Future K Observations			1								
9	mber of Bootstrap Operations			2000								
10												
11	Chlordane											
12												
13	General Statistics											
14	Total Number of Observations				66	Number of Missing Observations				0		
15	Number of Distinct Observations				59							
16	Number of Detects				32	Number of Non-Detects				34		
17	Number of Distinct Detects				32	Number of Distinct Non-Detects				27		
18	Minimum Detect				0.117	Minimum Non-Detect				0.0438		
19	Maximum Detect				0.825	Maximum Non-Detect				0.91		
20	Variance Detected				0.0289	Percent Non-Detects				51.52%		
21	Mean Detected				0.445	SD Detected				0.17		
22	Mean of Detected Logged Data				-0.891	SD of Detected Logged Data				0.44		
23												
24	Critical Values for Background Threshold Values (BTVs)											
25	Tolerance Factor K (For UTL)				1.997	d2max (for USL)				3.062		
26												
27	Normal GOF Test on Detects Only											
28	Shapiro Wilk Test Statistic				0.956	Shapiro Wilk GOF Test						
29	5% Shapiro Wilk Critical Value				0.93	Detected Data appear Normal at 5% Significance Level						
30	Lilliefors Test Statistic				0.134	Lilliefors GOF Test						
31	5% Lilliefors Critical Value				0.157	Detected Data appear Normal at 5% Significance Level						
32	Detected Data appear Normal at 5% Significance Level											
33												
34	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
35	Mean				0.295	SD				0.218		
36	95% UTL95% Coverage				0.731	95% KM UPL (t)				0.662		
37	90% KM Percentile (z)				0.575	95% KM Percentile (z)				0.654		
38	99% KM Percentile (z)				0.803	95% KM USL				0.963		
39												
40	DL/2 Substitution Background Statistics Assuming Normal Distribution											
41	Mean				0.306	SD				0.197		
42	95% UTL95% Coverage				0.699	95% UPL (t)				0.637		
43	90% Percentile (z)				0.558	95% Percentile (z)				0.629		
44	99% Percentile (z)				0.763	95% USL				0.908		
45	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
46												
47	Gamma GOF Tests on Detected Observations Only											
48	A-D Test Statistic				0.659	Anderson-Darling GOF Test						
49	5% A-D Critical Value				0.747	etected data appear Gamma Distributed at 5% Significance Lev						
50	K-S Test Statistic				0.147	Kolmogrov-Smirnoff GOF						
51	5% K-S Critical Value				0.156	etected data appear Gamma Distributed at 5% Significance Lev						
52	Detected data appear Gamma Distributed at 5% Significance Level											
53												
54	Gamma Statistics on Detected Data Only											
55	k hat (MLE)				6.224	k star (bias corrected MLE)				5.661		
56	Theta hat (MLE)				0.0716	Theta star (bias corrected MLE)				0.0787		
57	nu hat (MLE)				398.3	nu star (bias corrected)				362.3		
58	MLE Mean (bias corrected)				0.445							
59	MLE Sd (bias corrected)				0.187	95% Percentile of Chisquare (2k)				20.11		
60												
61	Gamma ROS Statistics using Imputed Non-Detects											
62	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											

	A	B	C	D	E	F	G	H	I	J	K	L
63	GROS may not be used when kstar of detected data is small such as < 0.1											
64	For such situations, GROS method tends to yield inflated values of UCLs and BTVs											
65	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
66					Minimum	0.117					Mean	0.325
67					Maximum	0.825					Median	0.292
68					SD	0.174					CV	0.537
69					k hat (MLE)	3.758					k star (bias corrected MLE)	3.597
70					Theta hat (MLE)	0.0865					Theta star (bias corrected MLE)	0.0904
71					nu hat (MLE)	496					nu star (bias corrected)	474.8
72					MLE Mean (bias corrected)	0.325					MLE Sd (bias corrected)	0.171
73					95% Percentile of Chisquare (2k)	14.35					90% Percentile	0.555
74					95% Percentile	0.649					99% Percentile	0.849
75	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
76	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
77					WH	HW					WH	HW
78	Approx. Gamma UTL with 95% Coverage				0.741	0.757	95% Approx. Gamma UPL				0.653	0.661
79	95% Gamma USL				1.1	1.161						
80												
81	The following statistics are computed using gamma distribution and KM estimates											
82	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
83					k hat (KM)	1.833					nu hat (KM)	242
84					WH	HW					WH	HW
85	Approx. Gamma UTL with 95% Coverage				1	1.085	95% Approx. Gamma UPL				0.827	0.876
86	95% Gamma USL				1.763	2.078						
87												
88	Lognormal GOF Test on Detected Observations Only											
89	Shapiro Wilk Test Statistic				0.914	Shapiro Wilk GOF Test						
90	5% Shapiro Wilk Critical Value				0.93	Data Not Lognormal at 5% Significance Level						
91	Lilliefors Test Statistic				0.175	Lilliefors GOF Test						
92	5% Lilliefors Critical Value				0.157	Data Not Lognormal at 5% Significance Level						
93	Data Not Lognormal at 5% Significance Level											
94												
95	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
96	Mean in Original Scale				0.329	Mean in Log Scale				-1.232		
97	SD in Original Scale				0.169	SD in Log Scale				0.486		
98	95% UTL95% Coverage				0.77	95% BCA UTL95% Coverage				0.762		
99	95% Bootstrap (%) UTL95% Coverage				0.788	95% UPL (t)				0.661		
100	90% Percentile (z)				0.544	95% Percentile (z)				0.649		
101	99% Percentile (z)				0.904	95% USL				1.294		
102												
103	Background DL/2 Statistics Assuming Lognormal Distribution											
104	Mean in Original Scale				0.306	Mean in Log Scale				-1.482		
105	SD in Original Scale				0.197	SD in Log Scale				0.902		
106	95% UTL95% Coverage				1.377	95% UPL (t)				1.036		
107	90% Percentile (z)				0.722	95% Percentile (z)				1.002		
108	99% Percentile (z)				1.854	95% USL				3.602		
109	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
110												
111	Nonparametric Distribution Free Background Statistics											
112	Data appear to follow a Discernible Distribution at 5% Significance Level											
113												
114	Nonparametric Uppper Limits for BTVs(no distinction made between detects and nondetects)											
115	Order of Statistic, r				65	95% UTL with95% Coverage				0.825		
116	Approximate f				1.711	Confidence Coefficient (CC) achieved by UTL				0.848		
117	95% UPL				0.751	95% USL				0.91		
118	95% KM Chebyshev UPL				1.253							
119												
120	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
121	data set free of outliers and consists of observations collected from clean unimpacted locations.											
122	The use of USL tends to provide a balance between false positives and false negatives provided the data											
123	represents a background data set and when many onsite observations need to be compared with the BTV.											
124												